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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,457	06/14/2001	Christian Caspersen	0459-0577P	1421
2292	7590	06/22/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LEE, SHUN K	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/806,457

Applicant(s)

CASPERSEN, CHRISTIAN

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,7-16,23-25,27-29 and 36-45 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,7-16,23-25,27-29 and 36-45 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 06 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, 29, 39, and 45 are objected to because of the following informalities:
 - (a) in claim 1, "the circular movement" on line 16 should probably be --the rotation--;
 - (b) in claim 29, "the circular movement" on line 11 should probably be --the rotation--;
 - (c) in claim 29, "the property of the marked objects" on line 12 should probably be --a property of the object--;
 - (d) in claim 29, "speciment" on line 13 should probably be --specimen--;
 - (e) in claim 39, "scanning control means" on line 2 should probably be --scanning means--; and
 - (f) in claim 45, "the fluorescent marker" on lines 1-2 should probably be --the fluorescent stain--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 23-25, 27, 28, 43, and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 recites the limitation "the optical path" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 27 recites the limitation "the light source" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 28 recites the limitation "the first light beam" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 43 recites the limitation "claim i" in line 1 which is vague and indefinite since it is unclear what claim i refers to.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 7-10, 12, 29, 36, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber *et al.* (US 6,110,748).

In regard to claim 1, Reber *et al.* disclose (Fig. 1) an apparatus for detecting a property of marked object contained in a specimen, the apparatus comprising:

- (a) a frame (is inherent in positioning mechanism 42; column 4, lines 17-28),
- (b) a member (20) positioned on the frame and having a surface that is adapted to receive and hold the specimen (column 2, line 28 to column 3, line 7),
- (c) a detector (38) for detecting the property of marked objects, and
- (d) scanning means (42) for scanning the specimen in relation to the detector (38) along a non-linear curve (e.g., spiral 152 in Fig. 12), wherein the scanning means comprises means (*i.e.*, rotary positioning mechanism; column 4, lines 17-28) for

rotating the member and means (*i.e.*, translational positioning mechanism; column 4, lines 17-28) for displacing the member, so as to detect the property of the marked objects in the entire specimen.

The apparatus of Reber *et al.* lacks an explicit description that the member is displaced along a radius of the circular movement of the member. However, Reber *et al.* also disclose (column 5, lines 1-9) that the positioning mechanisms are operated to collect data in a sequential manner from sites along annular (*e.g.*, circular 140 in Fig. 11) or spiral (*e.g.*, spiral 152 in Fig. 12) tracks (column 3, lines 5-7). It should be noted that a spiral track is generated by relative translation along a radius of the rotary movement. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the annular or spiral specimen scanning in the apparatus of Reber *et al.* is effected by relative translation along a radius of the circular movement of the member using the translational positioning mechanism.

In regard to claim **29**, the method steps are implicit for the apparatus of Reber *et al.* since the structure is the same as the applicant's apparatus of claim 1.

In regard to claim **7** which is dependent on claim 1, Reber *et al.* also disclose (column 4, lines 17-28) that the member is positioned for rotation about an axis on the frame and wherein the means for rotating the member rotates the member about the axis.

In regard to claims **8** and **9** which are dependent on claim 1, Reber *et al.* also disclose (column 5, lines 1-9) scanning control means (*e.g.*, processor 36) controlling the scanning means for scanning the specimen along a predetermined curve and that

the scanning control means are adapted to control the scanning means in such a way that the predetermined curve is a substantially circular curve (e.g., circular 140 in Fig. 11).

In regard to claim **10** (which is dependent on claim 8) and claim **36** (which is dependent on claim 29), Reber *et al.* also disclose (column 5, lines 58-62) storage means (e.g., memory 49 or device 20) for storage of detector signals (related to the detected property) provided by the detector (38) and corresponding position signals (related to the current position of the member) provided by the scanning control means.

In regard to claim **12** which is dependent on claim 1, Reber *et al.* also disclose (column 5, lines 1-22) signal processing means (e.g., processor 36) operatively connected to the detector (38) to detect a presence of an object based on the detector signals.

In regard to claim **40** which is dependent on claim 1, Reber *et al.* also disclose (column 3, lines 39-47) that the marked objects are marked with a fluorescent stain.

In regard to claim **41** which is dependent on claim 1, Reber *et al.* also disclose (column 3, line 63 to column 4, line 9) that the detector comprises magnetic detection means.

In regard to claim **42** which is dependent on claim 41, Reber *et al.* also disclose (column 3, line 63 to column 4, line 9) that the detector comprises a magnetic reading head.

In regard to claim **43** which is dependent on claim 1 in so far as understood, Reber *et al.* also discloses (column 3, line 63 to column 4, line 9) that the detector

comprises an optical detector for detection of light emitted from the object. While Reber *et al.* further disclose (column 3, lines 39-47) the detection of fluorescent members, the apparatus of Reber *et al.* lacks an explicit description that the optical detector detects light emitted from the object upon interaction with a light beam emitted by a light source. However, it should be noted that fluorescence is defined¹ as the “emission of electromagnetic radiation, especially of visible light, stimulated in a substance by the absorption of incident radiation and persisting only as long as the stimulating radiation is continued”. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide stimulating radiation (e.g., a light beam emitted by a light source) in the apparatus of Reber *et al.*, in order to detect fluorescence from the fluorescent members with the optical detector.

6. Claims 11, 13, 14, 27, 37, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber *et al.* (US 6,110,748) in view of Gordon (US 5,892,577).

In regard to claim 11 (which is dependent on claim 10) and claim 37 (which is dependent on claim 36), while Reber *et al.* also disclose (column 3, lines 56-60; column 4, lines 4-10) a CD-ROM or DVD reader which provides signals for processing by a processor such as a computer (column 5, lines 1-22), the apparatus of Reber *et al.* lacks an explicit description of means for sampling and digitizing the detector signals and the position signals. Gordon teaches (column 8, lines 15-56) to transfer detected signal data to a computer via a means for sampling and digitizing the signals. Therefore it would have been obvious to one having ordinary skill in the art at the time of the

¹ The American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by

invention to provide a means for sampling and digitizing the detector signals and the position signals in the apparatus of Reber *et al.*, in order to convert the data to a form suitable for processing by a computer.

In regard to claims **13** and **14** which are dependent on claim 12, the apparatus of Reber *et al.* lacks that the detected object positions stored in the storage means are retrieved and used by said scanning means to position a means for optical inspection of detected objects. Gordon teaches (column 5, lines 58-62; column 6, lines 4-10 and 19-32; column 7, line 55 to column 8, line 27) that the detected object positions stored in the storage means are retrieved and used by said scanning means to position a means for optical inspection of detected objects (*i.e.*, "look again at specific region of interest"; column 6, lines 4-10). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to position an optical inspection means (*e.g.*, CD-ROM reader) in the apparatus of Reber *et al.* using the scanning means and retrieved stored detected object positions, in order to look again at specific regions of interest (*e.g.*, any desired target object).

In regard to claim **27** which is dependent on claim 1 in so far as understood, while Reber *et al.* also disclose (column 3, lines 56-60; column 4, lines 4-10) a CD-ROM or DVD reader, the apparatus of Reber *et al.* lacks an explicit description that the CD-ROM or DVD reader comprises a coherent light source. However, CD-ROM (*i.e.*, compact discs) readers are well known in the art. For example, Gordon teaches (column 5, lines 28-31 and 64-67) that a conventional compact disc reader comprises a

coherent light source. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the detector (e.g., a CD-ROM reader) in the apparatus of Reber *et al.* comprises a coherent light source.

In regard to claim **44** which is dependent on claim 43, the apparatus of Reber *et al.* lacks that the detector comprises a CCD device. Gordon teaches (column 10, lines 7-19) to provide a CCD device for scanning a disc in order to obtain higher speed and higher resolution. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a CCD device as the detector in the apparatus of Reber *et al.*, in order to obtain higher speed and higher resolution.

7. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber *et al.* (US 6,110,748) in view of Demers (WO 98/12559).

In regard to claims **15** and **16** which are dependent on claim 1, while Reber *et al.* also disclose (column 7, lines 59-62) a member such as a standard CD-ROM to receive and hold the specimen, the apparatus of Reber *et al.* lacks that the specimen has an area larger than 500 mm² (e.g., larger than 8000 mm²). However, standard CD-ROMs (*i.e.*, compact discs) are well known in the art. For example, Demers teaches (pg. 5, third paragraph) that a compact disc is a 5.5 inch disc. A ~15328 mm² area has a diameter of ~140 mm (5.5 inch). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the ~15328 mm² area (*i.e.*, standard CD-ROM sized) member in the apparatus of Reber *et al.* is capable of

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receiving and holding specimens of $\sim 15328 \text{ mm}^2$ area or less (e.g., larger than 500 mm^2 or 8000 mm^2).

8. Claims 23-25, 28, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber *et al.* (US 6,110,748) in view of Ekins *et al.* (Multianalyte microspot immunoassay-microanalytical "compact disk" of the future, Clinical Chemistry, Vol. 37, no. 11 (1991), pp. 1955-1967).

In regard to claims **23-25** which are dependent on claim 1 in so far as understood, the apparatus of Reber *et al.* lacks that a mask is inserted in the optical path between the specimen and the detector, wherein the mask comprises at least one transparent aperture having a substantially rectangular shape with at least one dimension of the aperture, as projected on the specimen, between 0.75 and 2 times the dimensions of objects to be detected. Ekins *et al.* teach (left column on pg. 1964) that the highest signal/noise ratio is observed when the instrument field of view is restricted to a microspot area. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide an aperture in the apparatus of Reber *et al.* to restrict the field of view to substantially a microspot area (*i.e.*, matching size and shape), in order to detect fluorescent members with a desired signal/noise ratio.

In regard to claim **28** which is dependent on claim 1 in so far as understood, the apparatus of Reber *et al.* lacks that the first light beam is adapted provide a light spot having a diameter between 20-150 μm on the specimen. Ekins *et al.* teach (left column on pg. 1963) that as the area decreases, the signal/noise ratio increases and

approaches a maximum value of 60 as the area falls below 0.01 mm^2 . A 0.01 mm^2 area has a diameter of $112 \text{ }\mu\text{m}$. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a light spot having a diameter between $20\text{-}150 \text{ }\mu\text{m}$ (e.g., $112 \text{ }\mu\text{m}$) on the specimen in the apparatus of Reber *et al.*, in order to detect fluorescent members with a desired signal/noise ratio.

In regard to claim **45** which is dependent on claim 40, while Reber *et al.* also disclose (column 3, lines 39-47) the detection of fluorescent members, the apparatus of Reber *et al.* lacks that the fluorescent marker is Fluorescein. However, fluorescent markers such as fluorescein are well known in the art. For example, Ekins *et al.* teach (left column on pg. 1965) that fluorescein fluorescent markers (e.g., FITC) are commercially available. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the fluorescent members in the apparatus of Reber *et al.* is a known fluorescent member (e.g., Fluorescein).

9. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber *et al.* (US 6,110,748) in view of Gordon (US 5,892,577) as applied to claim 14 above, and further in view of Virtanen (US 6342349).

In regard to claims **38** and **39** which are dependent on claim 14, while Reber *et al.* also disclose (column 3, lines 56-60; column 4, lines 4-10) a CD-ROM or DVD reader, the modified apparatus of Reber *et al.* lacks that the means for optical inspection is a microscope (e.g., an automated microscope). Virtanen teaches (column 48, lines 41-48) that with proper software, optical disk readers are scanning confocal laser microscopes which allow the study of the detailed structure of biological and other

specimens. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide software in the modified apparatus of Reber *et al.* so that the detector (e.g., CD-ROM reader) is used as an automated microscope for the study of the detailed structure of biological and other specimens.

Response to Arguments

10. Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

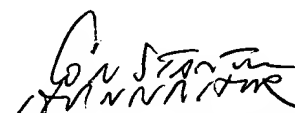
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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